

## User's Manual



## *MTP R 15HD RSA D*

### MTP 15HD Decora Receiver

Extron <b>USA - West</b> Headquarters <b>+800.633.9876</b> Inside USA / Canada Only <b>+1.714.491.1500</b> <b>+1.714.491.1517</b> FAX	Extron <b>USA - East</b> <b>+800.633.9876</b> Inside USA / Canada Only <b>+1.919.863.1794</b> <b>+1.919.863.1797</b> FAX	Extron <b>EMEA</b> <b>+800.3987.6673</b> Inside Europe Only <b>+31.33.453.4040</b> <b>+31.33.453.4050</b> FAX	Extron <b>Asia</b> <b>+800.7339.8766</b> Inside Asia Only <b>+65.6383.4400</b> <b>+65.6383.4664</b> FAX	Extron <b>Japan</b> <b>+81.3.3511.7655</b> <b>+81.3.3511.7656</b> FAX	Extron <b>China</b> <b>+400.883.1568</b> Inside China Only <b>+86.21.3760.1568</b> <b>+86.21.3760.1566</b> FAX	Extron <b>Middle East</b> <b>+971.4.2991800</b> <b>+971.4.2991880</b> FAX
--	--	---	---	---	--	---

# Precautions

## Safety Instructions • English



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

### Caution

- Read Instructions** • Read and understand all safety and operating instructions before using the equipment.
- Retain Instructions** • The safety instructions should be kept for future reference.
- Follow Warnings** • Follow all warnings and instructions marked on the equipment or in the user information.
- Avoid Attachments** • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

## Consignes de Sécurité • Français



Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).



Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

### Attention

- Lire les instructions** • Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.
- Conservier les instructions** • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.
- Respecter les avertissements** • Observer tous les avertissements et consignes marqués sur le matériel ou présents dans la documentation utilisateur.
- Eviter les pièces de fixation** • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

## Sicherheitsanleitungen • Deutsch



Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.



Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

### Achtung

- Lesen der Anleitungen** • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.
- Aufbewahren der Anleitungen** • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.
- Befolgen der Warnhinweise** • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.
- Keine Zusatzgeräte** • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

## Instrucciones de seguridad • Español



Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.



Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

### Precaucion

- Leer las instrucciones** • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.
- Conservar las instrucciones** • Conservar las instrucciones de seguridad para futura consulta.
- Obedecer las advertencias** • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.
- Evitar el uso de accesorios** • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

### Warning

- Power sources** • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.
- Power disconnection** • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).
- Power cord protection** • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.
- Servicing** • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.
- Slots and openings** • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.
- Lithium battery** • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

### Avertissement

- Alimentations** • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.
- Déconnexion de l'alimentation** • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.
- Protection du cordon d'alimentation** • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas éraillés ou pincés par des objets.
- Réparation-maintenance** • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.
- Fentes et orifices** • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.
- Lithium Batterie** • Il a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

### Vorsicht

- Stromquellen** • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.
- Stromunterbrechung** • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.
- Schutz des Netzkabels** • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegen gestellt werden können.
- Wartung** • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.
- Schlitze und Öffnungen** • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.
- Lithium-Batterie** • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

### Advertencia

- Alimentación eléctrica** • Este equipo debe conectarse únicamente a la fuente / tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearla ni eliminarla.
- Desconexión de alimentación eléctrica** • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.
- Protección del cables de alimentación** • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.
- Reparaciones/mantenimiento** • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación / mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.
- Ranuras y aberturas** • Si el equipo posee ranuras o orificios en su caja / alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.
- Batería de litio** • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

# Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

### USA, Canada, South America, and Central America:

Extron Electronics  
1001 East Ball Road  
Anaheim, CA 92805, USA

### Asia:

Extron Electronics, Asia  
135 Joo Seng Road, #04-01  
PM Industrial Bldg.  
Singapore 368363

### Europe, Africa, and the Middle East:

Extron Electronics, Europe  
Beeldschermweg 6C  
3821 AH Amersfoort  
The Netherlands

### Japan:

Extron Electronics, Japan  
Kyodo Building  
16 Ichibancho  
Chiyoda-ku, Tokyo 102-0082  
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.


*If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.*


Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

# 安全须知 • 中文

 这个符号提示用户该设备用户手册中有重要的操作和维护说明。

 这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

## 注意

**阅读说明书** • 用户使用该设备前必须阅读并理解所有安全和使用说明。

**保存说明书** • 用户应保存安全说明书以备将来使用。

**遵守警告** • 用户应遵守产品和用户指南上的所有安全和操作说明。

**避免追加** • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

## 警告

**电源** • 该设备只能使用产品上标明的电源。设备必须使用有地线的供电系统供电。第三条线（地线）是安全设施，不能不用或跳过。

**拔掉电源** • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

**电源线保护** • 妥善布线，避免被踩踏，或重物挤压。

**维护** • 所有维修必须由认证的维修人员进行。设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

**通风孔** • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。不要用任何东西挡住通风孔。

**锂电池** • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

## 声明

所使用电源为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对干扰采取切实可行的措施。

## FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**NOTE** *This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.*

## Table of Contents

---

<b>Chapter One • Introduction .....</b>	<b>1-1</b>
About the MTP 15HD Decora® Receiver.....	1-2
RS-232 function.....	1-3
Twisted Pair (TP) Cable Advantages.....	1-3
Transmission distance.....	1-3
<b>Chapter Two • Installation and Operation.....</b>	<b>2-1</b>
Installation.....	2-2
UL/safety requirements.....	2-2
Preparing the site and installing the wall box .....	2-2
Final installation .....	2-5
Connections and Settings.....	2-6
Rear panel features.....	2-6
Front panel features .....	2-8
Making Connections.....	2-9
Power supply wiring.....	2-9
TP cable termination.....	2-10
Audio/RS-232 cable termination.....	2-12
Receiver Considerations .....	2-12
Skew Delay Compensation .....	2-13
<b>Appendix A • Installation and Operation .....</b>	<b>A-1</b>
Specifications .....	A-2
Part Numbers .....	A-5
MTP receiver and compatible transmitters and switchers..	A-5
Included parts.....	A-5
Cables.....	A-6
Connectors.....	A-6
Decora Template Dimensions .....	A-7



# 1

## Chapter One

### Introduction

About the MTP 15HD Decora® Receiver

Twisted Pair (TP) Cable Advantages

68-1463-01 Rev. A  
09 08

*All trademarks mentioned in this manual are the properties of their respective owners.*

### About the MTP 15HD Decora® Receiver

The Extron MTP R 15HD RSA D is a mini twisted pair (MTP) receiver, in a Decora form factor, that auto-detects between audio or RS-232 serial data on the audio/RS-232 wire pair. The receiver is compatible with the entire line of Extron MTP 15HD transmitters and associated MTP products.

The Extron MTP transmitters and receivers comprise a system for long-distance distribution of VGA or other high resolution video and either audio or RS-232 communications.

The MTPs transmit and receive over Extron's Enhanced Skew-Free A/V UTP cable or over CAT 5, 5e, or 6 shielded twisted pair (STP), unshielded twisted pair (UTP), or foil shielded twisted pair (FTP) cable.

A compatible MTP transmitter inputs high or low resolution video signals (RGB, tri-level and bi-level component video, S-video, or composite video) and a wire pair that is either RS-232 serial signals or stereo audio. If the audio/RS-232 input is audio, the transmitter sums the left and right audio channels to convert the audio to mono (L+R) format. The transmitter converts the inputs to a proprietary signal and outputs that signal on an RJ-45 connector.

The MTP receiver inputs the transmitted proprietary signal on an RJ-45 connector, converts the video portion of the signal back into its original resolution, and outputs it locally on a 15-pin HD connector. Level and peaking controls allow you to enhance the video output for optimum display.

The receiver also detects whether the input on the audio/RS-232 wire pair is audio or serial data, converts it back to the appropriate format, and outputs the signal on a 5-pin captive screw connector.

The receiver is shipped with an external 12 V power supply that accepts 100 to 240 VAC, 50 Hz or 60 Hz input and provides worldwide power compatibility.

### RS-232 function

When the audio/RS-232 portion of the TP link is RS-232, it is either unidirectional or bidirectional, selectable by a DIP switch.

**NOTE** *By default, the RS-232 portion of the TP link is unidirectional only from the transmitter to the receiver. If there is only one receiver in the system, you can set it to be bidirectional. When bidirectional is selected, the receiver can receive commands from the transmitter and pass RS-232 responses back to the transmitter. See the BI-RS232 DIP switch description in "Rear panel features", on page 2-7, to allow bidirectional RS-232 communications.*

The RS-232 link:

- Supports software flow control (XON, XOFF).

**NOTE** *Hardware flow control is not supported.*

- Supports full duplex and half duplex operation.
- Supports any baud rate (up to 38,400), data bits, parity, stop bits, and data format without configuration.

**NOTE** *Higher rates are possible, but performance varies as a function of baud rate and TP cable length.*

### Twisted Pair (TP) Cable Advantages

Twisted pair cable is much smaller, lighter, more flexible, and less expensive than coaxial cable. These TP products make cable runs simpler and less cumbersome. Termination of the cable with RJ-45 connectors is simple, quick, and economical.

### Transmission distance

**NOTE** *VGA video transmitters provide pre-peaking, which boosts the signal before it is transmitted.*

The maximum distance is determined by the frequency and resolution of the signal that is input to the transmitter. The table on the next page specifies the recommended maximum transmission distances and transmitter Pre-Peak switch positions (refer to the applicable transmitter manual) using Extron Enhanced Skew-Free A/V UTP cable or UTP CAT 5, 5e, or 6 cable, terminated with RJ-45 connectors.

**NOTE** *It is possible to exceed the recommended distance; however, image quality may be reduced.*

**NOTE** *Resolutions marked with an asterisk (\*) in the table on the next page have the same range specifications at 75 Hz.*

### NOTE

The MTP units are designed for and perform best with Extron Enhanced Skew-Free A/V cable terminated in accordance with the TIA/EIA T 568 A wiring standard. CAT 5, 5e, and 6 cables are acceptable, but less preferable. We also recommend the use of preterminated and tested cables. Cables terminated on site should be tested before use to ensure that they comply with Category 5 specifications.

### Recommended transmission distances at 60 Hz

Video format	Pre-Peak off	Pre-Peak on	Max. distance (high quality)	Max. distance (variable quality)
Composite, S-video, Component			800' (245 m)	1000' (300 m)
640 x 480	<300' (90 m)	>350' (105 m)	700' (215 m)	750' (240 m)
800 x 600	<300' (90 m)	>350' (105 m)	550' (165 m)	650' (200 m)
1024 x 768*	<300' (90 m)	>350' (105 m)	500' (150 m)	600' (185 m)
1280 x 960*	<300' (90 m)	>350' (105 m)	400' (120 m)	500' (150 m)
1280 x 1024*	<250' (75 m)	>300' (90 m)	350' (105 m)	450' (135 m)
1360 x 765	<250' (75 m)	>300' (90 m)	400' (120 m)	500' (150 m)
1365 x 768	<250' (75 m)	>300' (90 m)	400' (120 m)	450' (135 m)
1366 x 768	<250' (75 m)	>300' (90 m)	400' (120 m)	450' (135 m)
1400 x 1050	<250' (75 m)	>300' (90 m)	350' (105 m)	400' (120 m)
1440 x 900	<250' (75 m)	>300' (90 m)	350' (105 m)	400' (120 m)
1600 x 1200*	<250' (75 m)	>300' (90 m)	300' (90 m)	450' (135 m)
1920 x 1200	<250' (75 m)	>300' (90 m)	300' (90 m)	400' (120 m)
HDTV 720p	<250' (75 m)	>300' (90 m)	400' (120 m)	500' (150 m)
HDTV 1080i	<250' (75 m)	>300' (90 m)	300' (90 m)	400' (120 m)
HDTV 1080p	<250' (75 m)	>300' (90 m)	300' (90 m)	400' (120 m)



## MTP R 15HD RSA D

# Chapter Two

## Installation and Operation

Installation

Connections and Settings

Making Connections

Receiver Considerations

Skew Compensation

# Installation

## Installation

The MTP R 15HD RSA D receiver can be installed in a one-gang electrical wall box with a Decora wall plate cover (supplied).

The installation must conform to national and local electrical codes and to the wall plate's size requirements.

### UL/safety requirements

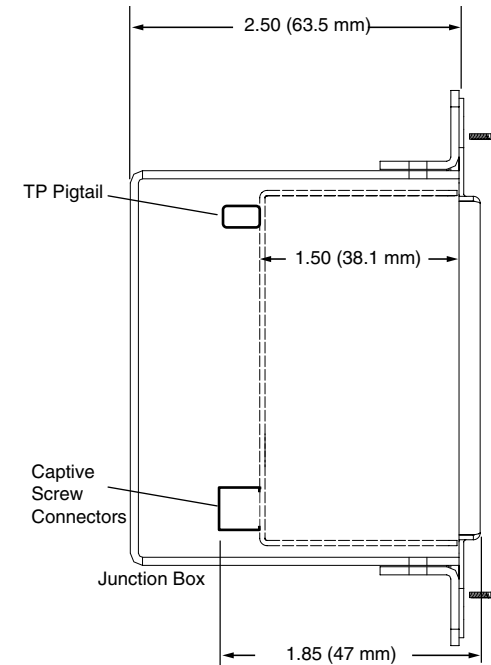
The following Underwriters Laboratories (UL) requirements pertain to the installation of the Decora receiver into a wall or furniture.

1. This unit must not be connected to a centralized DC power source or used beyond its rated voltage range.
2. This unit must be installed in a UL listed junction box.
3. This unit must be installed with conduit in accordance with National Electrical Code.

### Preparing the site and installing the wall box

Choose a location that allows cable runs without interference. Allow enough depth for both the wall box and the cables. The box should be at least 2.5" (6.4 cm) deep to accommodate the connectors and cables. Install the cables into the wall, furniture, or conduits before installing the wall plate.

**NOTE** The Decora unit is very deep and has a connector and a cable pigtail on the back side (figure 2-1 on page 2-3). Extron recommends its 1-gang or 2-gang junction boxes (part # 980130 or 980084), which have a depth of 2.5" (6.4 cm).



**Figure 2-1 — Decora unit depth profile**

To install a new wall box, perform steps 1 through 9, below. If a suitable wall box is already installed, perform steps 6 through 9, starting on the next page. A UL Listed wall box is recommended.

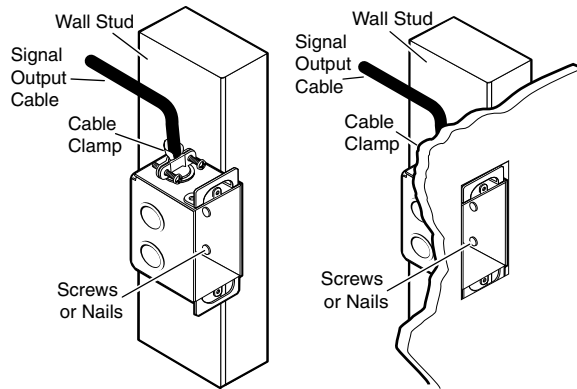
1. If a wall box is not available to use for a template, use the dimensions on page A-7 to create a template. If installing directly into furniture, cut out the center portion of your template.

**NOTE** The drawing on page A-7 is not full size or to scale. Do not scale up or print to use as a template.

2. Place the wall box (or your template) against the installation surface, and mark the opening guidelines.
3. Cut out the material from the marked area.
4. Insert the wall box into the opening. The box or the wall plate's rear connectors should fit easily into the opening. Enlarge or smooth the edges of the opening if needed.



- Secure the wall box with nails or screws, leaving the front edge flush with the outer wall or furniture surface. See figure 2-2.



**Figure 2-2 — Installing the wall box**

**NOTE** If attaching the wall box to wood, use four #8 or #10 screws or 10-penny nails. A minimum of 0.5" (1.3 cm) of screw thread must penetrate the wood.

If attaching the wall box to metal studs or furniture, use four #8 or #10 self-tapping sheet metal screws or machine bolts with matching nuts.

- Feed the power cable through the opening and through the wall box punch-out holes into the box, securing the cable with cable clamps to provide strain relief.

**NOTE** In order to fit in the junction box, the TP cable and RJ-45 connector should not have a boot installed.

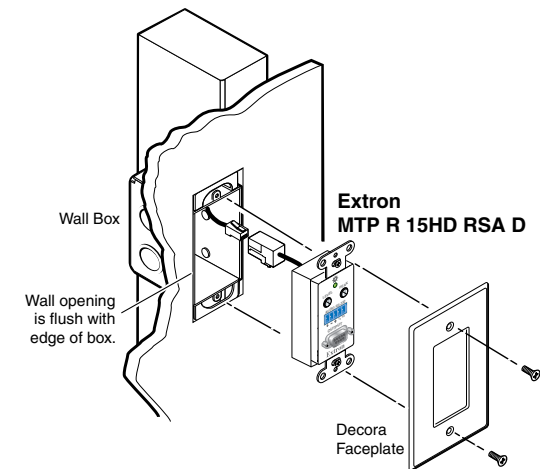
- Feed the twisted pair cable pigtail out through the wall box punch-out holes, securing the pigtail with cable clamps to provide strain relief.
- Trim back and/or insulate exposed cable shields with heat shrink to reduce the chance of short circuits.  
To prevent short circuits, the outer foil shield can be cut back to the point where the cable exits the cable clamp.
- Connect the power cable to the rear of the unit and the TP cable to the RJ-45 pigtail. See "Rear panel features", later in this chapter, for connector wiring details.

- Connect a video and an RS-232 and/or audio device to the front panel (see "Front panel features", later in this chapter, for connector details).
- Restore the power supply, and test the transmitter/receiver system. Make any cabling adjustments before final installation, as the cables will be inaccessible afterwards.

### Final installation

After testing and making any adjustments, do the following:

- At the power outlet, unplug the power supply.
- Mount the receiver into the box, and attach the supplied Decora faceplate to the unit, as shown in figure 2-3.



**Figure 2-3 — Mounting the receiver**

- At the power outlet, reconnect the power supply.

Connections and Settings

See figure 2-4 to identify the rear and front panel connections on the receiver.

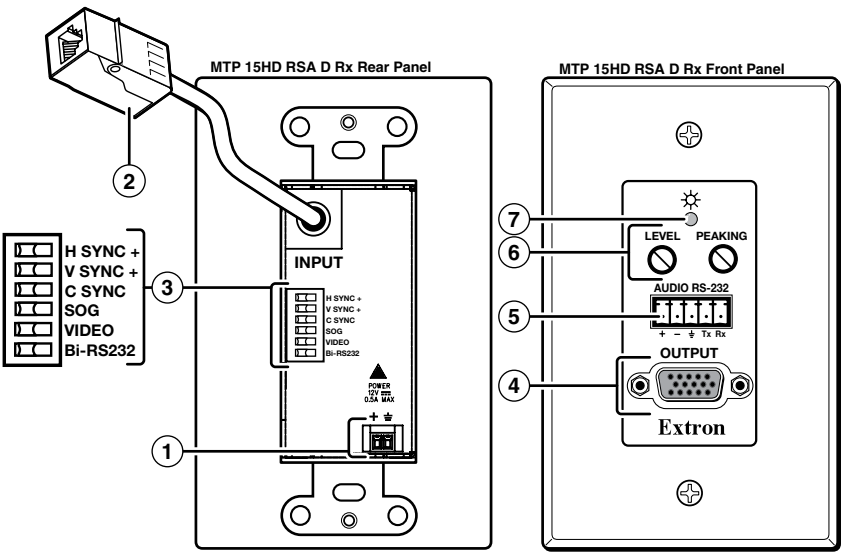


Figure 2-4 — Receiver's features

Rear panel features

- ① **DC power connector** — If applicable, plug the external 12 VDC power supply into this 2-pole captive screw connector. See "Power supply wiring" on page 2-9 to wire the connectors.

**NOTE** The remote power capabilities available with certain MTP models are not supported by this unit; the transmitter and receiver both must be powered.

- ② **Input connector** — Connect the TP cable from the transmitter to this pigtail RJ-45 female connector. See "TP cable termination" on page 2-10 to wire the RJ-45 connectors.

**NOTE** See the table on page 1-4 for recommended transmission ranges.

- ③ **DIP switches**

**Horizontal Sync switch (1)** — Set this switch on (right) for positive horizontal sync (or positive composite sync if the Composite Sync switch is also on) or off (left) for negative sync.

**NOTE** Most devices use negative sync.

**Vertical Sync switch (2)** — Set this switch on (right) for positive vertical sync or off (left) for negative sync.

**NOTE** Most devices use negative sync.

**NOTE** Set the Composite Sync, SOG, and Video DIP switches as shown in the table below for the various input and output video formats.

**Composite Sync switch (3)** — Set this switch on (right) for RGBS or off (left) to output RGBHV or RGsB video. See the table below.

Input signal format to the transmitter	Output signal format from the receiver	Receiver's DIP switch settings		
		C Sync	SOG	Video
RGBHV	RGBHV	<input type="checkbox"/> ←	<input type="checkbox"/> ←	<input type="checkbox"/> ←
	RGBS	<input type="checkbox"/> →	<input type="checkbox"/> ←	<input type="checkbox"/> ←
	RGsB	<input type="checkbox"/> ←	<input type="checkbox"/> →	<input type="checkbox"/> ←
RGBS	RGBS	<input type="checkbox"/> →	<input type="checkbox"/> ←	<input type="checkbox"/> ←
	RGsB	<input type="checkbox"/> ←	<input type="checkbox"/> →	<input type="checkbox"/> ←
RsGsBs	RsGsBs	<input type="checkbox"/> ←	<input type="checkbox"/> ←	<input type="checkbox"/> →
RGsB	RGsB	<input type="checkbox"/> ←	<input type="checkbox"/> ←	<input type="checkbox"/> →
Component	Component	<input type="checkbox"/> ←	<input type="checkbox"/> ←	<input type="checkbox"/> →
S-video	S-video	<input type="checkbox"/> ←	<input type="checkbox"/> ←	<input type="checkbox"/> →
Composite	Composite	<input type="checkbox"/> ←	<input type="checkbox"/> ←	<input type="checkbox"/> →

**Sync-on-Green (SOG) switch (4)** — Set this switch on (right) for RGsB video (when the input is RGBHV or RGBS) or off (left) to output RGBHV, RsGsBs, or RGBS video. See the table above.

**Video switch (5)** — Set this switch on (right) for RsGsBs, RGsB, component/S-video/composite video or off (left) to output RGBHV or RGBS video. See the table above.

**BI-RS232 (6)** — Set this switch on (right) to select bidirectional communications when serial data is present on the audio/RS-232 wire pair. Set the switch off (left) to select unidirectional communications. The default position is off (left).

**NOTE** This switch is ignored if audio is present on the audio/RS-232 wire pair.

### Front panel features

- ④ **Output video connector** — Connect a projector or other high resolution video device to this 15-pin HD connector.
- ⑤ **Audio RS-232 output connector** — Insert a 3.5 mm, 5-pole captive screw connector into this jack for a mono audio and/or an RS-232 serial output. See "Audio/RS-232 cable termination", on page 2-12, to wire the connector for either or both formats.

**NOTE** *The receiver auto-detects whether the audio/RS-232 pair of the TP input is audio or RS-232, converts the signal content accordingly, and outputs the appropriate signals on the appropriate pins of this connector.*

- ⑥ **Level and Peaking controls** —

**Level control** — Level alters the video output voltage to affect the brightness of the displayed image. Adjust the knob while viewing the displayed image to set the level/boost that provides the best picture quality.

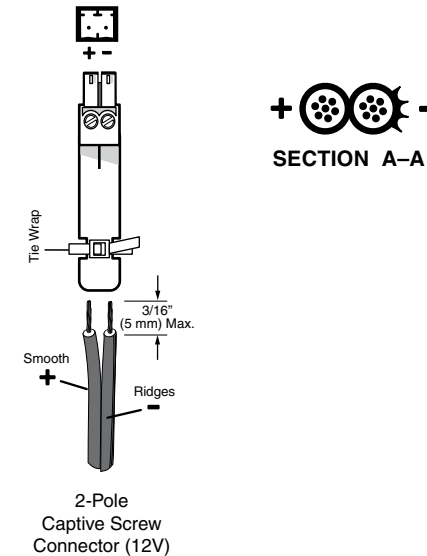
**Peaking control** — Peaking affects the sharpness of a picture. Increased peaking can compensate for mid- and high-frequency detail loss from low bandwidth system components or capacitance in long cables. The minimum setting (at the counterclockwise limit) provides no peaking. The maximum setting (at the clockwise limit) provides 100% peaking. Adjust this control to obtain the optimum picture sharpness.

- ⑦ **Power LED** — This LED indicates power is applied to the MTP.

### Making Connections

#### Power supply wiring

Figure 2-5 shows how to wire the power connector.



**Figure 2-5 — Power connector wiring**

**CAUTION** *Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the MTP. Identify the power cord negative lead by the ridges on the side of the cord (figure 2-5).*

To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

**WARNING** *The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.*

**CAUTION** *The length of the exposed (stripped) copper wires is important. The ideal length is 3/16" (5 mm). Longer bare wires can short together. Shorter wires are not as secure in the direct insertion connectors and could be pulled out.*

**NOTE** *Do not tin the power supply leads before installing them in the direct insertion connector. Tinned wires are not as secure in the connectors and could be pulled out.*

## Installation and Operation, cont'd

---

Use the supplied tie-wrap to strap the power cord to the extended tail of the connector.

Alternatively, an optional Extron PS 123 Universal 12 VDC Power Supply, part #60-814-01, can power multiple Extron 12 VDC devices using only one AC power connector.

### TP cable termination

**NOTE** *RJ-45 termination with CAT 5, CAT 5e, or CAT 6 cable must comply with the TIA/EIA T568A or TIA/EIA T568B wiring standards for all connections.*

*RJ-45 termination with Skew-Free A/V UTP cable must comply with TIA/EIA T568A only.*

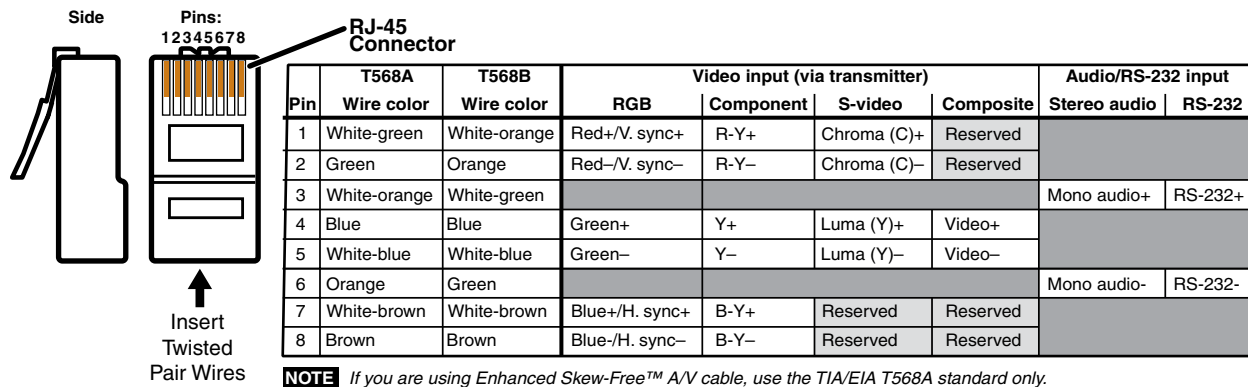
Figure 2-6, on the next page, details the recommended termination of TP cables with RJ-45 connectors in accordance with the TIA/EIA T568A or TIA/EIA T568B wiring standards. You can use either standard with CAT 5/5e/6/7 cable, but ensure that you use the same standard on both ends of the cable.

**NOTE** *The audio data that may be carried on wire pair 3 and 6 is incompatible with the Extron TPX 88A, which cannot switch the audio, output it locally, or break it away.*

**NOTE** *Enhanced Skew-Free A/V cable is **not recommended** for Ethernet/LAN applications. This cable is specially designed for compatibility with Extron's Twisted Pair products that are wired using the TIA/EIA T568A standard.*

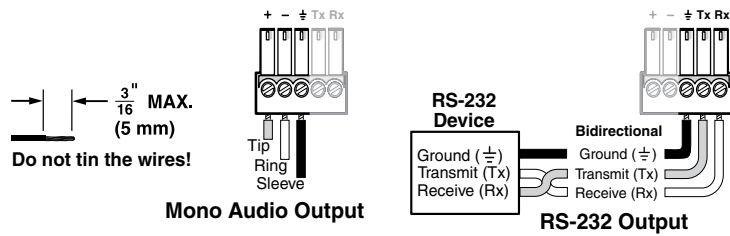
*The green, brown, and blue wire pairs of this cable have virtually identical lengths and should be used to transmit the RGB signals.*

*The orange wire pair of this cable has a different length and **should not** be used to transmit the RGB signals.*



**Figure 2-6 — TP cable termination**

### Audio/RS-232 cable termination



**Figure 2-7 — Captive screw audio/RS-232 connector wiring**

#### CAUTION

The length of the exposed (stripped) portion of the copper wires is important. The ideal length is 3/16" (5 mm). Longer bare wires can short together. Shorter bare wires are not as secure in the direct insertion connectors and could be pulled out.

### Receiver Considerations

#### NOTE

Each transmitter in a system requires a separate receiver.

#### NOTE

Up to seven standard receivers (MTP RL 15HD RS and MTP RL 15HD A, with or without SEQ) can be connected in series between the transmitter and the MTP R 15HD RSA D. This daisy chain is accomplished using the standard receivers' Buffered Output connectors. The total distance from the transmitter's TP output to the last receiver in the chain should not exceed the recommended distance for the resolution being used.

#### NOTE

The receivers' buffered outputs do not provide pre-peaking control. The total recommended distance for an entire daisy chain is the same as for a single transmitter and receiver. The transmitter's Pre-Peak switch has the same effect on the recommended transmission distance for a daisy chain as for a single transmitter and receiver.

#### NOTE

See the recommended transmission ranges in the table on page 1-4. The recommendations in the table apply equally for a single transmitter and receiver and for a transmission daisy chain. For example, the maximum suggested range for 1024 x 768 video is 300' with Pre-Peak off and 500' with Pre-Peak on for either one transmitter and one receiver or one transmitter and three daisy-chained receivers.

#### NOTE

For daisy-chained units, the first receiver in the chain must be at least 100' from the transmitter when the Pre-Peak switch is on.

#### NOTE

For daisy-chained units, any receiver in the chain closer than 350' may experience some form of over-peaking when the Pre-Peak switch is on.

### Skew Delay Compensation

CAT 5/5e/6 TP cable can lead to registration errors between the red, green, and blue video signals. Pair skew can be measured with test equipment or identified by viewing a crosshatch test pattern with a critical eye to determine if either the red, green, or blue video image leads (appears to the left of) the other two video images.

Try using the following methods to minimize or eliminate pair skew:

- Switch to Extron's Enhanced Skew-Free A/V UTP cable.
- Add a skew compensation cable equal to the length of pair skew to the receiver's output.
- Install an SEQ 100 15HD Skew Equalizer on the receiver's video output and adjust the skew for the leading video image.



# A

## **Appendix A**

### **Installation and Operation**

Specifications

Part Numbers

Decora Template Dimensions

## Reference Information

### Specifications

#### Video

Gain .....	Unity
Number/signal type .....	1 set of proprietary analog signals
Connectors .....	1 female RJ-45 on a pigtail

#### Video input — See MTP Series Transmitters' video output specifications.

#### Video output

Number/signal type .....	1 analog VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs, HD component video, component video, S-video, or composite video
Connectors .....	1 female 15-pin HD
Nominal level .....	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels .....	0.3 V to 1.45 Vp-p
Impedance .....	75 ohms
Return loss .....	<-30 dB @ 5 MHz
DC offset .....	<±20 mV with input at 0 offset

#### Sync

Output type .....	RGBHV, RGBS, RGsB, RsGsBs
Standards .....	NTSC 3.58, NTSC 4.43, PAL, SECAM
Output level .....	4.0 V to 5.0 Vp-p, unterminated
Output impedance .....	110 ohms
Polarity .....	Positive or negative (switch selectable)

#### Audio

Number/signal type .....	1 set of proprietary analog signals from an MTP transmitter
Connector .....	1 female RJ-45
Gain .....	Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response .....	20 Hz to 20 kHz, ±1 dB
THD + Noise .....	0.15% @ 1 kHz, 0.3% @ 20 kHz at nominal level

S/N .....	>70 dB at maximum output (unweighted)
CMRR .....	>43 dB @ 20 Hz to 20 kHz

#### Audio output

Number/signal type .....	1 mono, balanced/unbalanced
Connector .....	(1) 3.5 mm captive screw connector, 5 pole (uses 3 poles)
Impedance .....	50 ohms balanced, 100 ohms balanced
Gain error .....	±1 dB channel to channel
Nominal level .....	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level .....	>+14 dBu, unbalanced at 1% THD+N

#### Control/remote — external device (pass-through, unidirectional or bidirectional)

Serial control port input/output .....	1 set of proprietary signals on a female RJ-45 jack
Serial control port output/input .....	RS-232 via 3 poles of a 3.5 mm captive screw connector, 5 pole

**NOTE** The serial communications link is unidirectional only, transmitter to receiver, **unless** the receiver's directional DIP switch has been repositioned. The switch should be repositioned only when the receiver is the only one in the system.

Baud rates .....	Up to 38400 bps at up to 1000' (300 m) (Higher data rates and distances are possible. Performance varies based on baud rate and cable length.)
Protocol .....	Data bits = 5 through 8 Stop bits = 1 or 2 Parity = odd, even, none Flow control = XON, XOFF, none

**NOTE** Protocol is mirrored between the transmitter and the receiver.

Serial control pin configurations .....	Captive screw connector: 1 = TX, 2 = RX, 3 = GND
---	--

#### General

Recommended cable type .....	CAT 5/5E/6 (shielded or unshielded)
External power supply .....	100 VAC to 240 VAC, 50/60 Hz, external; to 12 VDC, 2 A, regulated
Power input requirements .....	12 VDC, 0.5 A



Reference Information, cont'd

Temperature/humidity.....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling .....	Convection, no vents
Furniture mount.....	Yes, using a standard electrical wall box or Decora® size mud ring
Enclosure type .....	Metal
Enclosure dimensions	
Faceplate.....	2.6" H* x 1.3" W x 0.24" D (6.6 cm H* x 3.3 cm W x 0.5 cm D) *Height is 3.8" (9.7 cm) including mounting tabs. (Fits the opening in a 1 gang, 4.4" H x 2.7" W Decora wallplate. Depth excludes connectors.)
Device .....	2.75" H x 1.65" W x 1.3" D (7.0 cm H x 4.2 cm W x 3.3 cm D) (Depth excludes connectors.)
Product weight .....	0.4 lbs (0.2 kg)
Shipping weight .....	2 lbs (1 kg)
Vibration.....	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety.....	CE, C-tick, CUL, UL
EMI/EMC .....	CE, C-tick, FCC Class A, ICES, VCCI
MTBF.....	30,000 hours
Warranty .....	3 years parts and labor

**NOTE** All nominal levels are at ±10%.

**NOTE** Specifications are subject to change without notice.

Part Numbers

MTP receiver and compatible transmitters and switchers

**NOTE** A complete transmission system requires at least one transmitter and one MTP receiver (the MTP R 15HD RSA D, for this manual).

Receiver	Part number
MTP R 15HD RSA D receiver	60-929-01

Compatible devices	Part number
MTP T 15HD RS transmitter	60-652-01
MTP T 15HD A transmitter	60-669-01
MTPX Plus 816	60-834-01
MTPX Plus 168	60-833-01
MTPX Plus 1616	60-832-01
MTPX Plus 1632	60-898-01
MTPX Plus 3216	60-899-01
MTPX Plus 3232	60-897-01
MTPX Plus 3232	60-897-01
MTPX 816	60-831-01
MTPX 168	60-830-01
MTPX 1616	60-829-01
MTPX 1632	60-895-01
MTPX 3216	60-896-01
MTPX 3232	60-894-01

Included parts

The following parts are included in each order for an MTP R 15HD RSA D:

Included parts	Part number
Power supply	28-181-01LF
Decora cover plate, white	100-358-01
5-pole captive screw connector, qty. 1	10-319-10
Tweezer (small screwdriver)	
User's Manual	

Cables

**NOTE** Enhanced Skew-Free™ A/V UTP cables are not recommended for Ethernet/LAN applications.

Enhanced Skew-Free™ A/V cable	Part number
Enhanced Skew-Free A/V cable (cut, various lengths)	26-569-xx
Enhanced Skew-Free A/V 1000' (Bulk) (non-plenum)	22-141-03
Plenum enhanced Skew-Free A/V 1000, (Bulk)	22-142-03

Connectors

Connector	Part number
CAT 6 jack (black), qty. 10	100-476-01
CAT 6 jack (red), qty. 10	100-477-01
CAT 6 jack (blue), qty. 10	100-478-01
CAT 6 jack (orange), qty. 10	100-479-01
CAT 6 jack (gray), qty. 10	100-480-01
CAT 6 jack (white), qty. 10	100-481-01
CAT 6 jack (ivory), qty. 10	100-482-01

Decora Template Dimensions

If you need to create a template, use the **dimensions** shown on figure A-1, below.

**NOTE** The drawing is not full size or to scale. Do not scale up or print to use as a template.

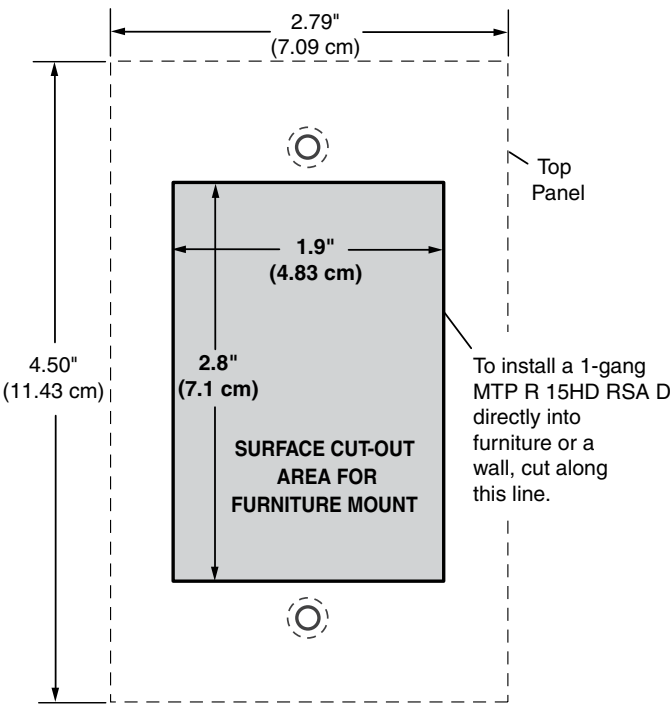


Figure A-1 — Decora Template Dimensions

